	HS (n = 6)		HS + TCV (n = 6)	
	Baseline	Post HS	Baseline	Post HS
ANP(pg/ml)	395	550†	336	430*
cGMP(pmol/ml)	33.7	10.2◇	43.6#	13.1†
MAP(mmHg)	87.2	93.0	94.0	98.2
PCWP(mmHg)	19.0	21.6	14.8	18.5†
RAP(mmHg)	7.3	7.8	4.3#	6.8†
U-V(ml/min)	0.55	0.32*	0.92#	0.45†
U-Na(μEq/min)	41.5	7.6*	60.6#	42.5†#

*p < 0.05, †p < 0.01, ◇p < 0.001 vs Baseline: #p < 0.05 vs HS group cGMP; cyclic GMP, MAP; mean arterial pressure, PCWP; pulmonary wedge capillary pressure, RAP: mean right atrial pressure, U-V; urinary flow rate, U-Na; urinary sodium excretion.

and endogenous ANP regulates the body fluid balance without the presence of Ang II antagonism.

978-100 Protective Effects of Angiotensin-Type$_1$-Receptor Antagonism Against Isoproterenol (ISO)-Induced Cardiac Injury in Rats

Daniela Grimm, Dietmar Elsner, Christina Peter, Günter Bruckschlegel, Günter A. J. Riegger, Eckhard P. Kromer. *University of Regensburg, Regensburg, Germany*

We investigated the hemodynamic, morphologic and neurohumoral effects of losartan (LOS) in experimental heart failure, induced by application of ISO (150 mg/kg BW. s.c.). Two weeks after ISO-injection, 70 ISO- and 35 control-rats were examined. Further, we investigated the effects of chronic LOS-treatment (n = 20). After ISO-application, the animals were treated for 14 days with either vehicle (VEH), or LOS (40 mg/kg/d).

Echocardiography displayed a significant increase of LV mass and of LV enddiastolic dimension Heart rate, LV enddiastolic pressure and right atrial pressure were increased in the ISO-group ($p < 0.005$) and decreased to normal ranges in the LOS-group ($p < 0.001$). Blood pressure was decreased in ISO, and LOS-groups vs. VEH ($p < 0.01$). Mean aortic blood flow velocity was decreased in the ISO-group. Cardiac ACE-activity ($p < 0.01$), renin, aldosterone and cANP levels were significantly higher in the ISO-group as compared to the VEH-group. Treatment with LOS attenuated the observed changes to normal ranges. Histomorpholgy of ISO-treated hearts revealed several alterations, such as myocyte necrosis, cellular reaction and fibrosis. Extracellular matrix proteins, laminin and fibronectin were increased 1.6 and 3-fold in the ISO group as measured by quantitative image analysis. LOS-treated hearts revealed the same infarct-like lesions but in a lower grade.

In summary, ISO-induced experimental heart failure in rats shows characteristic findings and is highly reproducible. LOS attenuated the observed changes induced by ISO.

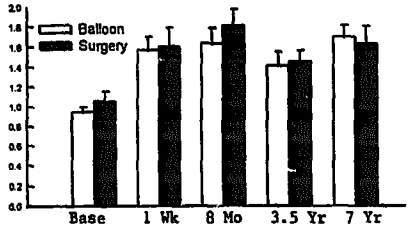
979 Issues in Mitral Valve Disease

Tuesday, March 26, 1996, 3:00 p.m.–5:00 p.m.
Orange County Convention Center, Hall E
Presentation Hour: 3:00 p.m.–4:00 p.m.

979-85 Percutaneous Balloon Versus Closed Mitral Commissurotomy: 7 Year Follow-up of A Randomized Trial

P. Raghava Raju, Zoltan G. Turi, B. Soma Raju, Joshua Wynne, Barbara S. Fromm, Susan I. Farkas, Peter Farkas. *MediCiti Hospital, Hyderabad, India and Wayne State University, Detroit, MI*

We have reported previously the initial results, 1 week, 8 month and 3.5 year follow-up comparing patients randomized prospectively to percutaneous balloon mitral valvuloplasty (PBMV) or surgical closed mitral commissurotomy (CMC). Seven years after initial PBMV (n = 20) or CMC (n = 19), follow up was obtained on 35 patients; 31 underwent cardiac catheterization. Data were analyzed by an investigator blinded to treatment. There were no significant differences between groups in hemodynamics, mitral valve morphology, exercise duration or functional status. Valve area (cm^2;Fick), see Figure.



Thirteen patients (6 PBMV, 7 CMC) were judged to have recurrent stenosis since randomization; 12 were redilated. Moderate or severe mitral regurgitation was present in 5 patients (2 PBMV, 3 CMC); no patient had a septal defect. Three patients have died (2 balloon, 1 surgery). Conclusion: in this closely followed cohort, PBMV and CMC have similar results and a 33% restenosis rate through 7 years.

979-86 A Randomized Study of Open Mitral Commissurotomy Versus Balloon Valvuloplasty for Selected Patients. Immediate and One Year Follow-up Results

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Balloon valvuloplasty *(BV)* has been accepted as an alternative method to surgery to treat mitral stenosis *(MS)*. We compared these two techniques in a randomized and prospective study. Sixty patients *(pts)*, average age 33 years, with pliable *MS* without significative mitral regurgitation *(MR)* were randomized into two groups: G I — 31 pts submitted to BV by transeptal approach and G II — 29 pts who underwent an open mitral commissurotomy. The two groups were similar regarding functional class *(FC)* III/IV *(NYHA)* and hemodynamic findings before intervention, as well as echodopplercardiographic *(ECHO)* score (4–9). *ECHO* study was performed before, 48 hours after the procedure and after one year follow-up.

Immediate mean mitral gradient (mmHg) decreased from 12 ± 6 to 5 ± 2 ($p < 0.001$) in G I and from 11 ± 4 to 6 ± 2 ($p < 0.001$) in G II. Mean mitral valve area *(MVA)* increased from 1.04 ± 0.21 to 2.22 ± 0.41 cm^2 ($p < 0.001$) in GI and from 0.96 ± 0.21 to 2.54 ± 0.41 cm^2 ($p < 0.001$) in GII. There were no deaths in both groups. In G I, two pts had cardiac tamponade and were submitted to surgical drainage, two had pericardial efusion, three others developed moderate *MR*. In G II, three pts had atrial fibrilation, four pts had anemia needed blood transfusion and immediate reoperation and one pt developed moderate *MR*. All pts relieved symptoms (FC I/II). One year follow-up showed mean *MVA* of 2.00 ± 0.39 (G I) and 2.17 ± 0.33 cm^2 (G II) and maintenance of clinical improvement.

Thus, both procedures were safe and had similar improvement in *FC* and *MVA* that persisted after 1 year follow-up.

979-87 A Simple Practical Approach to Mitral Regurgitation: Validation by *SIMULTANEOUS* Doppler/Angiographic Study

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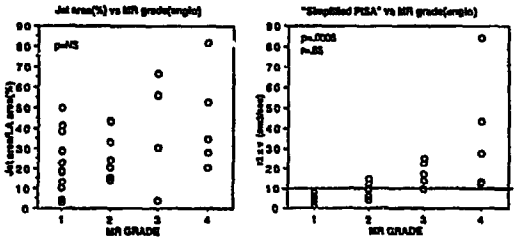
The noninvasive quantification of the severity of mitral regurgitation (MR) remains difficult. The color flow jet area is widely utilized but has many known limitations. Proximal Isovelocity Surface Area (PISA) should overcome those limitations but has not been widely used due to cumbersome methodology. A major problem with prior validation studies has been nonsimultaneous Doppler/catheterization data. Therefore, in 33 pts (17 M, 16 F, 65 ± 12 yrs) MR was quantified *simultaneously* using "simplified PISA" method, Doppler color flow jet area, and left ventriculography. MR quantification by "simple PISA" method is the simple product of square of the aliasing radius, and velocity of the proximal isosurface ($r^2 \times V$). Angiographic grade correlated with "simplified PISA" method ($r^2 \times V$), but lacked correlation with Doppler color flow jet area method as shown below. In addition, a cutoff value of 10(cm^3/sec) for $r^2 \times V$, the "simplified PISA" method was able to distinguish grade 3 and 4(moderately severe and severe)MR from grade 1 and 2(mild and moderate) MR with a sensitivity of 100% and a specificity of 87%.



Conclusions: 1) A "simplified PISA" method correlated well with conventional angiography and can be rapidly performed. 2) Doppler color flow jet

TUESDAY POSTER